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09/801,773	03/09/2001	Osamu Kuroda	Q61192	4550

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EXAMINER	
LEE, SHUN K	

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/801,773	KURODA ET AL.	
	Examiner	Art Unit	
	Shun Lee	2878	

-- Th MAILING DATE of this communication app ars on the cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,3,5-14,16 and 17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *11* is/are allowed.

6)☒ Claim(s) *2,3,5,6,8-10,12-14,16 and 17* is/are rejected.

7)☒ Claim(s) *7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newman *et al.* (US 5,420,441).

In regard to claim **10**, Newman *et al.* disclose (column 7, lines 42-47; Fig. 6) a storable fluorescent inspection sheet (106) having stored and recorded a radiation inspection image (*e.g.*, having a rectangular shape; see Fig. 11) that has a density pattern in which one or more low-density and high-density regions having a contrast difference of at least 1:20 (*i.e.*, cascading six lead masks with each 0.05 mm lead layer resulting in a roughly 30% x-ray modulation depth; column 6, lines 54-66; thus providing

transmissions ranging from 1 to 0.03; column 8, lines 39-40) are arrayed in a horizontal scanning direction.

While the sheet of Newman *et al.* lacks an explicit description of a contrast difference of at least 1:50, Newman *et al.* also disclose (column 1, lines 49-53) that it is desirable for the method to provide analysis of the exposure latitude and photometric response linearity over the 10,000:1 storage phosphor dynamic range. Newman *et al.* further teach (column 2, lines 28-46; Fig. 6) that a special test target (104) is used to expose a storage phosphor cassette (*i.e.*, storable fluorescent inspection sheet 106) which is then read and analyzed. Therefore it would be obvious to one of ordinary skill to expose the inspection sheet of Newman *et al.* with a 1:10,000 contrast difference test target and to analyze the 10,000:1 contrast difference radiation inspection image stored therein, in order to determining scanner performance (*e.g.*, exposure latitude and photometric response linearity) over the 10,000:1 storage phosphor dynamic range.

In regard to claim **9**, Newman *et al.* is applied as in claim 10 above. Newman *et al.* also disclose (column 1, line 13 to column 2, line 16) a method of inspecting influence of stray light (*i.e.*, scatter or flare artifacts) which occurs in a radiation image reader equipped with horizontal scanning means for scanning excitation light on a storable fluorescent sheet, having stored and recorded a radiation image, in a horizontal scanning direction, vertical scanning means for scanning said storable fluorescent sheet in a vertical scanning direction approximately perpendicular to said horizontal scanning direction, and reading means for obtaining an image signal which represents said radiation image by photoelectrically reading said radiation image, stored

and recorded in said storable fluorescent sheet, by the horizontal scanning of said excitation light; said inspection method comprising the steps of:

(a) preparing (column 2, lines 52-55) a storable fluorescent inspection sheet that has stored and recorded a radiation inspection image which has a density pattern in which one or more low-density and high-density regions having a contrast difference arrayed in said horizontal scanning direction;

(b) obtaining (column 2, lines 56-58) an image inspection signal representing said radiation inspection image, by photoelectrically reading said radiation inspection image from said storable fluorescent inspection sheet with said reading means; and

(c) inspecting (column 2, lines 59-60) said influence of stray light, based on an image reproduced from said image inspection signal.

4. Claims 2, 3, 5, 6, 8, 12-14, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newman *et al.* (US 5,420,441) in view of Farrokhnia *et al.* (US 6,231,231).

In regard to claims **2**, **3**, **12**, and **16**, Newman *et al.* is applied as in claims 9 and 10 above. The method of Newman *et al.* lacks that the boundary line between the low-density and high-density regions extends between opposite edges of the sheet and is a straight line inclined (*e.g.*, on a diagonal) with respect to the horizontal scanning direction and that the density pattern includes two high-density regions and one low-density region in the order of one high-density region, the low-density region, and the other high-density region arrayed in the horizontal scanning direction. However, test

targets are well known in the art. For example, Farrokhnia *et al.* teach (column 7, lines 25-58) to incline the straight boundary lines between a plurality of low-density and high-density regions with respect to the horizontal scanning direction in order to determine both horizontal and vertical MTF in an x-ray system. Therefore it would be obvious to one of ordinary skill to incline the straight boundary lines (*e.g.*, on an image diagonal) in the method of Newman *et al.* between a plurality of low-density and high-density regions with respect to the horizontal scanning direction, in order to determine a plurality of horizontal and vertical MTF along a line from one radiation inspection image edge to the opposing radiation inspection image edge.

In regard to claims **5**, **6**, and **17**, Newman *et al.* is applied as in claim 10 above. In addition, Newman *et al.* in view of Farrokhnia *et al.* is applied as in claims 2, 3, and 16 above.

In regard to claims **8** and **14** which are dependent on either claim 5 or claim 6, Newman *et al.* disclose (column 6, lines 57-63; column 7, lines 42-47; Fig. 6) disposing a radiation transmittable member (104) at a position corresponding to said density pattern on a storable fluorescent sheet (106), the radiation transmittable member (104) having a radiation transmission factor which corresponds to said contrast difference; and storing and recording said radiation inspection image in said storable fluorescent sheet (106), by illuminating said storable fluorescent sheet (106), on which said radiation transmittable member (104) has been disposed, with a dose of radiation that corresponds to said contrast difference (*i.e.*, single photographing).

In regard to claim **13** which is dependent on claim 8, the method of Newman *et al.* lacks that the radiation transmittable member partially overlaps said storable fluorescent inspection sheet. However, Newman *et al.* also disclose that there exists clear regions (*e.g.*, 4 in Fig. 5) which are used for certain analysis (*e.g.*, FFT; column 7, lines 15-18; column 13, lines 25-40). Therefore it would be obvious to one of ordinary skill to provide a radiation transmittable member partially overlaps said storable fluorescent inspection sheet in the method of Newman *et al.*, in order to obtain a plurality of clear areas (*e.g.*, a region where the radiation transmittable member does not overlap the storable fluorescent inspection sheet) for analysis of regions where unattenuated incident radiation has been recorded.

Allowable Subject Matter

5. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claim 11 is allowed.

7. The following is a statement of reasons for the indication of allowable subject matter: the instant application is deemed to be directed to an nonobvious improvement over the invention patented in US Patent 5,420,441. The improvement comprises in combination with other recited elements, repeating the disposition of a radiation shielding member on a storable fluorescent sheet and the illumination with a radiation dose that corresponds to a contrast difference, until a density pattern is obtained.

Response to Arguments

8. Applicant's arguments filed 30 April 2004 have been fully considered but they are not persuasive.

Applicant argues (last two paragraphs on pg. 8 to first two paragraphs on pg. 10 of remarks filed 30 April 2004) that Newman *et al.* do not analyze the contrast difference of high and low density regions since contrast is different from dynamic range. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (*i.e.*, analyze contrast differences) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Claim 10 recites the limitation of a "storable fluorescent inspection sheet having stored and recorded a radiation inspection image that has a density pattern in which one or more low-density and high-density regions having a contrast difference of at least 1:50 are arrayed in a horizontal scanning direction". Claim 9 includes a substantially similar limitation. It is important to recognize that the claims only recite the limitation of a stored radiation inspection image having a contrast difference of at least 1:50. Thus an analysis of contrast differences within the stored radiation inspection image is not recited in the rejected claim(s). Moreover even if applicant's arguments are considered, Newman *et al.* state (column 8, lines 11 and 12) that "The corner points are located by a differential contrast edge detection algorithm" and (column 10, line 44 to column 11, line 34) that "Flare light is a collector 80 (FIG. 3) artifact which reduces the

contrast of an image due to unwanted backscatter entering the collector 80 from neighboring bright regions. The flare light ratio is measured by averaging the dark signal value in region (6) (FIG. 5) of the test target which is surrounded by bright regions, with that of region (4). The ratio of the two signal levels gives the percentage of flare light susceptibility for high contrast regions ... The algorithm locates corners and edges in the scanned image using a histogram threshold method. The histogram is defined by evaluating the parameters <H> and <L> which are respectively the average count values for the high and low transmission regions defining the symbol of interest. A binary histogram is then defined by the threshold transition value: T=(<H>+<L>)/2 ... The reader 10 assigns count values which correspond to the beam transmission in logarithmic "milli-density" units. Thus, if the beam transmission is attenuated by a factor of "X", the scanner assigns the value of Count=max_count+(log(X)*1000) where max_count=3200 typically, and 0<X<1. As an example, absolute transmission values of X=1.0, 0.1, 0.01, and 0.001 results in count values of 3200, 2200, 1200, and 200, respectively, for a well calibrated scanner. Thus, the count value is an increasing function of the transmission, and (by definition) a decreasing function of attenuation ... The lines defining the three orientation corner points (1,2,3) (see FIG. 5) are comprised of six lead foil layers, and will therefore have the maximum absorption (minimum transmission) signal in the scanned target image. The program first determines the <H> and <L> values for this region by averaging the highest and lowest code values in the first 20 lines of the image, and defines the histogram threshold value T ... ". Thus it is clear that Newman *et al.* teaches analysis of

contrast differences (*i.e.*, determining average count values for the high and low transmission regions defining the symbol of interest) with the example of absolute transmission values of X=1.0, 0.1, 0.01, and 0.001 (*i.e.*, the stored radiation inspection image of the symbol of interest having a contrast difference of 1000:1).

Applicant argues (last paragraph on pg. 9 of remarks filed 30 April 2004) that Newman *et al.* do not appear to describe low-density and high-density regions arrayed in a horizontal scanning direction. Examiner respectfully disagrees. Newman *et al.* disclose (Figs. 5 and 11) low-density and high-density regions (*i.e.*, symbols of interest) arrayed in both the slow and fast scanning directions (see also column 5, lines 40-56).

Applicant argues (third and fourth paragraphs on pg. 10 of remarks filed 30 April 2004) that there is no need to examine every point along a line between opposite edges. Examiner respectfully disagrees. Newman *et al.* state (column 9, lines 145-48) that "Geometric linearity of the scan is the measure of the degree of geometric distortion, i.e. an unwanted enlarging or demagnification of any or all parts of the scanned image". Thus Newman *et al.* suggest that an examination of every point along a line between opposite edges is desirable since unwanted enlarging or demagnification of any or all parts of the scanned image can occur.

In response to applicant's argument (last paragraph on pg. 10 to first paragraph on pg. 13 of remarks filed 30 April 2004) that the coupon 375 of Farrokhnia *et al.* which contains coupon edges 1410 cannot be placed between the lead masks of Newman *et al.*, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it

that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, Farrokhnia *et al.* teaches an orientation (*e.g.*, inclination) of the one or more low-density and high-density regions of Newman *et al.* provides advantages (*e.g.*, both horizontal and vertical MTF can be determined from the inclination).

In response to applicant's arguments (second and third paragraphs on pg. 13 of remarks filed 30 April 2004) against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, Newman *et al.* discloses (*e.g.*, see Fig. 5) arrays of low and high density regions.

Applicant argues (last two paragraphs on pg. 13 of remarks filed 30 April 2004) that the test target of Newman *et al.* completely covers the storage phosphor sheet. Examiner respectfully disagrees. Newman *et al.* disclose that there exists clear regions (*e.g.*, 4 in Fig. 5) which are used for certain analysis (*e.g.*, FFT; column 7, lines 15-18; column 13, lines 25-40). Therefore it would be obvious to one of ordinary skill to provide a radiation transmittable member partially overlaps said storable fluorescent inspection sheet in the method of Newman *et al.*, in order to obtain a plurality of clear areas (*e.g.*, a region where the radiation transmittable member does not overlap the

storable fluorescent inspection sheet) for analysis of regions where unattenuated incident radiation has been recorded.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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